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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,555	10/24/2003	David C. Lovetro	ANO 6468 US1/3263 CIP	7490
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AKZO NOBEL INC. LEGAL & IP 120 WHITE PLAINS ROAD, SUITE 300 TARRYTOWN, NY 10591			EXAMINER CARRILLO, BIBI SHARIDAN	
			ART UNIT	PAPER NUMBER
			1792	
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			11/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,555	Applicant(s) LOVETRO ET AL.	
	Examiner Sharidan Carrillo	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 8-12, 17, 18, 20 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8-12, 17, 18, 20 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7-17-08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The limitations wherein at least about 41% of the initial amount of the hydrogen peroxide remains in said solution, constitutes new matter, not supported by the originally filed specification. Therefore, the limitations of claim 25 constitute new matter.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 23-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 is indefinite because it is unclear what the skilled artisan would consider as a "small amount". Claim 25 is indefinite because "the initial amount of hydrogen peroxide" lacks positive antecedent basis.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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6. Claims 1-3, 8, 12, 17-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brasch (43782270) in view of applicant's admission of the prior art, or McDonogh (5364549) or Jadesjo (EP0845526).

In reference to claims 1-2 and 12, Brasch teaches a method of etching copper from a circuit board by contacting with an aqueous solution comprising hydrogen peroxide, at least one mineral acid (sulfuric acid) and 0.1-20% by weight phosphonic acid (col. 3, lines 25-30, col. 4, lines 17-20, col. 2, lines 35-40). In reference to cleaning metals, the limitations are met since Brasch is performing the same step of contacting the metal with the claimed composition. Additionally, since "etching" and "cleaning" are equivalent terms, the limitations are met since during the etching of the copper metal, contaminants are removed from the copper surface. In reference to claim 2, refer to col. 3, lines 25-30.

Brasch fails to teach diluting a concentrated hydrogen peroxide solution (20-70%) in order to formulate an aqueous cleaning solution comprising 0.5 to about 20 weight percent hydrogen peroxide. Applicant's specification, page 1, lines 5-13 teaches that it is well known and conventional in the art to dilute concentrated hydrogen peroxide solutions, containing from about 30 to about 80% by weight hydrogen peroxide to form diluted solutions having concentration ranging from 0.1 to about 20% weight percent hydrogen peroxide for practical commercial applications. It would have been within the level of the skilled artisan to have diluted the concentrated hydrogen peroxide solution of Brasch, to form a solution comprising 0.1 to 20% by weight hydrogen peroxide, as taught by applicant's admission of the prior art, since it is well known and

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conventional in the art to use diluted hydrogen peroxide solutions for various applications including bleaching, cleaning, etching, disinfection, and sterilization.

Brasch fails to teach diluting a concentrated hydrogen peroxide solution (20-70%) in order to formulate an aqueous cleaning solution comprising 0.5 to about 20 weight percent hydrogen peroxide. Jadesjo teaches a hydrogen peroxide solution for cleaning. In col. 4, lines 40-55, Jadesjo teaches that it is conventional in the art to dilute a concentrated solution of hydrogen peroxide prior to use. Specifically, Jadesjo teaches a concentrated hydrogen peroxide having a concentration within the range of 10-60% by weight and forming a ready to use solution having a concentration of between about 0.1 to 10% by weight hydrogen peroxide (col. 5, lines 5-10). It would have been within the level of the skilled artisan to have diluted the concentrated hydrogen peroxide solution of Brasch, to form a diluted solution, as taught by Jadesjo, since it is well known and conventional in the art to use diluted hydrogen peroxide solutions for cleaning purposes prior to use. Furthermore, as noted by the examiner, the Jadesjo reference was provided by applicant in the communication of 10/24/03 and considered and acknowledged by the examiner on 7/21/04.

Brasch fails to teach diluting a concentrated hydrogen peroxide solution (20-70%) in order to formulate an aqueous cleaning solution comprising 0.5 to about 20 weight percent hydrogen peroxide. McDonogh teaches hydrogen peroxide solutions for use in metal surface treatments. In col. 4, lines 44-65, McDonogh teaches that it is conventional in the art to dilute a concentrated solution of hydrogen peroxide prior to use. Specifically, McDonogh teaches a commercially concentrated hydrogen peroxide

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having a concentration within the range of 35-70% by weight and forming a ready to use solution having a concentration of between about 1 to 10% by weight hydrogen peroxide (col. 4, lines 44-65). It would have been within the level of the skilled artisan to have diluted the concentrated hydrogen peroxide solution of Brasch, to form a diluted solution, as taught by McDonogh, since it is well known and conventional in the art to use diluted hydrogen peroxide solutions for treatment of metal surfaces prior to use.

In reference to claim 3, Brasch fail to teach 35-45% of phosphonic acids. However, it would have been within the level of the skilled artisan to adjust the concentration of phosphonic acid since Brasch teaches that higher concentrations can be used (col. 3, lines 25-30). Additionally, it is well known in the art that higher concentrations of stabilizer are required for dilute solutions of hydrogen peroxide, as evidenced by Christiansen (4614646, col. 7, lines 54-62). Therefore, given that Brasch in view of the secondary references teach dilution of the hydrogen peroxide and since it is well known in the art that diluted solutions of hydrogen peroxide require higher concentrations of stabilizer, it would have been well within the level of the skilled artisan to increase the concentration level of phosphonic acid present in the hydrogen peroxide solution of Brasch in order to effectively stabilize and prevention decomposition of the hydrogen peroxide solution. Re claims 17-18 and 20, Brasch fails to teach the pH of less than 7. One would have reasonably expected the pH of the composition to be less than 7 since the pH is a chemical property of the composition and Brasch teaches the same composition as the instantly claimed invention. Additionally, one would have reasonably expected the pH of the composition to be less than 7 since the prior art

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teaches that compositions comprising hydrogen peroxide, surfactant, and phosphonic acid having pHs of less than 7 (Jadesjo et al., 5885953). In reference to claim 8, refer to col. 2, line 30.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brasch (4378270) in view of) in view of applicant's admission of the prior art, or McDonogh (5364549) or Jadesjo (EP0845526), as applied to claims 1-3, 8, 12, 17-18, and 20, as described in paragraph 6 above, and further in view of Schellinger Jr. (4401509).

Brasch teaches the invention substantially as claimed with the exception of the concentration of sulfuric acid. Schellinger teaches a composition for etching copper from circuit boards using sulfuric acid, hydrogen peroxide, and phosphonic acid. In col. 3, lines 3-5, Schellinger teaches 2-20% sulfuric acid. Schellinger further teaches that the concentration of sulfuric acid is not critical.

It would have been obvious to a person of ordinary skill in the art to have modified the method of Brasch to include adjusting the concentration of sulfuric acid to 2-20%, as taught by Schellinger, for purposes of etching copper from integrated circuit boards.

8. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brasch (4378270) in view of applicant's admission of the prior art, or McDonogh (5364549) or Jadesjo (EP0845526), as applied to claims 1-3, 8, 12, 17-18, and 20, as described in paragraph 6 above, and further view of Sugihara et al. (5705089).

In reference to claims 10-11, and 15, Brasch teaches the invention substantially as claimed with the exception of the surfactant. Sugihara teaches an acidic or basic solution comprising hydrogen peroxide, surfactant, sulfuric acid, and phosphonic acid for cleaning semiconductor substrates in order to remove metallic contaminants. In col. 3, lines 60-65, Sugihara teaches a nonionic surfactant as a wetting agent for purposes of enhancing removal of contaminants from the substrate surface. It would have been obvious to a person of ordinary skill in the art to modify the method of Brasch to include nonionic surfactants of Sugihara, as a wetting agent, for purposes of enhancing removal of contaminants from the substrate surface.

9. Claims 23 -25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brasch (43782270) in view of Cooper et al. (6063205).

In reference to claim 23, Brasch teaches a method of etching copper from a circuit board by contacting with an aqueous solution comprising hydrogen peroxide, at least one mineral acid (sulfuric acid) and 0.1-20% by weight phosphonic acid (col. 3, lines 25-30, col. 4, lines 17-20, col. 2, lines 35-40). In reference to step b of claim 23, Cooper teaches treating the metal at room temperature and a time period of 5 to about 30 minutes. Brasch fails to teach passivating the metal by contacting with the hydrogen peroxide solution. However, one would have reasonably expected passivating to occur since Brasch is performing the same step of contacting the metal with the claimed composition. Alternatively, it is well known in the art, as evidenced by Cooper et al., that treating a surface (i.e. semiconductor wafer) with hydrogen peroxide results in both cleaning of the surface and passivation of the substrate surface (col. 3,

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lines 35-40). Therefore, given the teachings of Cooper et al., one would have reasonably expected the step of contacting the surface with hydrogen peroxide solution to also result in passivation of the substrate surface since Cooper et al. teach hydrogen peroxide as a cleaning and passivating agent. Additionally, it is well known and conventional in the art to clean contaminants from the substrate surface and passivate the surface using hydrogen peroxide (Chai et al., 5837662). Re claim 25, the skilled artisan would have reasonably expected the hydrogen peroxide to remain in solution, since hydrogen peroxide is miscible with the other components present in the cleaning solution. Furthermore, the skilled artisan would have reasonably expected the hydrogen peroxide of Brasch to remain in solution since Brasch is performing the same method steps as the instantly claimed invention.

Response to Arguments

10. The rejection of claims 23-24, under 112, first paragraph is withdrawn in view of the newly amended claims.

11. The rejection of the claims, under 112, second paragraph, is maintained for the reasons recited above.

12. The rejections of the claims as being unpatentable over Brasch in view of the secondary references are maintained for the reasons cited above.

13. Applicant argues that the prior art of Brasch, McDonogh, and Jadesjo fail to teach using high amounts of HEDP in hydrogen peroxide solutions and in the substantial absence of other components. Applicant further argues that Brasch teaches that the solution contains significant amounts of other components. Applicant's

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arguments are unpersuasive since the cleaning solution "comprises from about 0.5 to about 20 wt% hydrogen peroxide", and therefore, the cleaning solution can include other ingredients because of the open ended language of "comprising".

In reference to applicant's arguments of higher amounts of HEDP, the secondary references of McDonogh and Jadesjo are relied upon to teach that it is well known and conventional in the art to dilute a concentrated solution of hydrogen peroxide prior to use. The primary reference of Brasch teaches that higher concentrations phosphonic acids can be used and Christiansen emphasizes that with "more dilute solutions of peroxide, more stabilizer is required in order to prevent decomposition of hydrogen peroxide.

Re Christiansen, applicant argues that in view of the Bonislowski Declaration, it was generally understood by the skilled artisan that high levels of stabilizer have a destabilizing effect on high concentrations of peroxide. Applicant's arguments are unpersuasive since the examiner finds the Declaration unpersuasive for the reasons previously presented in the last Office Action.

14. Applicant continues to argue that the 1.132 Declaration of Lovetro et al. provides a showing of unexpected results. Specifically, applicant argues that the 1.132 Declaration shows unexpected stability characteristics due to the presence of HEDP additive in relatively high amounts. Applicant's arguments are unpersuasive for the following reasons, as previously presented in the last Office Action:

a) The 1.132 declaration submitted is not proper for this instant application since it is in response to the Final Office Action of Application 10/301760.

b) The Declaration refers to references cited, namely the Ramirez and the Brasch. The examiner has not relied upon the Ramirez reference for rejecting any of the claims of the instant application.

c) The Declaration does not address the prior art of Sugihara et al., which is used to reject claims 23-24.

d) The Declaration is not commensurate in scope with the instantly claimed invention. The Declaration shows applicant's invention using 7.9% HEDP, however, applicant's claims are directed to about 10 to about 60 weight % HEDP. Therefore, applicant's declaration is not commensurate in scope with the instantly claimed invention. Furthermore, applicant's declaration is not commensurate in scope with applicant's arguments that unexpected stability is achieved using higher levels of HEDP with higher concentration levels of hydrogen peroxide. The declaration does not show varying levels of HEDP with increasing concentrations of hydrogen peroxide and the effect on stability of the hydrogen peroxide. Clearly, 7.9% is not a high concentration of HEDP. Additionally, the declaration does not compare the prior art of Brasch with applicant's invention. Even if the Declaration was commensurate in scope with the instantly claimed invention, the declaration would not be persuasive for the following reasons. Clearly, Brasch teaches that it is well within the level of the skilled artisan to adjust the concentration of the organophosphonic acids. Brasch further teaches the phosphonic acids within the range of 0.1% to 20% by weight, which clearly falls with the

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claimed range and the concentration recited in the Declaration. Additionally, it is well known in the art that higher concentrations of stabilizer are required for dilute solutions of hydrogen peroxide, as evidenced by Christiansen (4614646, col. 7, lines 54-62).

Therefore, given that Brasch in view of the secondary references teach dilution of the hydrogen peroxide and since it is well known in the art that diluted solutions of hydrogen peroxide require higher concentrations of stabilizer, it would have been well within the level of the skilled artisan to increase the concentration level of phosphonic acid present in the hydrogen peroxide solution of Brasch in order to effectively stabilize and prevent decomposition of the hydrogen peroxide solution.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on M-W, F 6:30-5:00pm, alternating Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sharidan Carrillo/
Primary Examiner, Art Unit 1792

bsc